SuperArray Bioscience Corporation

Maryland Technology Extension Service

SuperArray Bioscience Corporation Develops Hybridization Chamber

Client Profile:
SuperArray Bioscience Corporation, located in Frederick, Maryland, produces Gene Expression MicroArrays for DNA studies. The MicroArrays are used for gene testing in humans, mice or rabbits and examine ailments ranging from cancer to heart disease. SuperArray sells its products to customers in 20 different countries ranging from Australia to Europe to Asia. The company employs 12 people.

Situation:
SuperArray Bioscience Corporation sought to make gene testing easier and more efficient for their biomedical clients that utilize the company's specialized gene expression MicroArrays. Their clients, which include government and university labs as well as pharmaceutical companies, were limited to a single array processing tube that required many tedious labor intensive steps to carry out the gene testing. SuperArray contacted the Maryland Technology Extension Service (MTES), a NIST MEP network affiliate, for assistance. MTES previously provided assistance to the company in several project areas including an expansion of their manufacturing facility.

Solution:
MTES worked with SuperArray Vice President, Dr. Sean Yu, Senior Scientist, Dr. Ray Blanchard, and the Strauss Co., to create the GEArray Express Hybplate, a compartment-sealed chamber enabling eight, simple, speedy, simultaneous array tests. MTES interfaced with SuperArray and the Strauss Co. on the design of the Hybplate to create a product that was technologically sound, easy to use and relatively inexpensive. The company helped with the biological aspects of the prototype design, providing knowledge as to how reagents and solutions would react with different materials. It turned out to be a challenge, since at first look a simple solution appeared to be possible, but when the team got into the detailed design it was anything but simple due to the many variables. After a period of two to three months and the development of various prototypes, a final design for an eight-compartment, foil-sealed hybrization chamber was completed.
The most important characteristic of the GEArray Express Hybplate is the user-friendly seal. It has three layers -- backing, adhesive and foil -- that consolidate into one material. It can be effortlessly peeled from the backing paper and placed on a hybrization chamber with eight different sections. The adhesive molds around the outer edge of each section preventing reactions from contaminating one another. Different reagents and solutions can be added through needle penetration of the foil, a process that is considerably easier than screwing and unscrewing the caps on single array processing tube. The seals developed by MTES weren't just effective from a performance standpoint, but they were also cost-efficient, costing less than one dollar per unit. A company can purchase the new Hybplate product with the eight coordinating arrays allowing them to use a new gene testing format that is faster and more convenience at less cost compared to previous available methods.

Results:
As a result of the development of the GEArray Express Hybplate product, SuperArray expects:
* $200,000 in increased sales annually.
* $200,000 in retained sales annually.
* $20,000 in labor cost savings annually.
* $3,000 increased investment of equipment.
* Retention of one full-time employee.

Testimonial:
"We are the only company who offers an extensive list of different applications. We will gradually sell all our products in the Hybplate [compartment chamber] trays."
Sean Yu, Vice President